

## ABSTRACT

A hydrorefining catalyst of a hydrogenation active metal component supported on a refractory porous carrier has a median pore diameter determined by the nitrogen adsorption method of 8 to 20 nm, a pore volume determined by the nitrogen adsorption method of 0.56 cm<sup>3</sup>/g or greater, and a pore volume of pores with a pore diameter of 50 nm or larger determined by the mercury intrusion porosimetry method of 0.32 cm<sup>3</sup>/g or greater. Both the demetallizing activity and metal deposition capacity of the catalyst in hydrogenation and demetallizing of heavy oil are high. The hydrorefining catalyst is obtained by kneading a porous starting powder principally composed of  $\gamma$ -alumina and having a pore capacity of 0.75 m<sup>3</sup>/g or larger and a mean pore diameter of 10 to 200  $\mu$ m, molding and calcining, and supporting an active metal component on the product.